

Patent claims

1. Control and/or monitoring device including at least a first pair (P) of interactive elements (1, 2) made of an electronic label (1) and of an electronic label reader (2), in mutual communication by means of respective radio aerials (10, 20), the reader (2) feeding the label (1) with electrical energy in an electro-magnetic way and the label (1) comprising a memory (111) in which is saved an identification code (KID1), which is specific to it and that it selectively transmits to the reader (2), characterised by the fact that it includes moreover a state encoder (3, 21) belonging at least partially to the label (1) and producing a status signal (STAT) representative of a logical or analogical state affecting the label (1) or a relationship between the label (1) and the reader (2) and characterised by the fact that the status signal (STAT) is transmitted by the label (1) to the reader (2) or directly read by this reader (2).
2. Control and/or monitoring device according to claim 1, characterised by the fact that the label (1) is mobile compared to the reader (2) and by the fact that the status signal (STAT) is representative of a relative position of the label (1) compared to the reader (2).
- 20 3. Control and/or monitoring device according to claim 2, characterised by the fact that the state encoder (3, 21) includes at least a permanent magnet (31a) carried by one of the elements (1) of the first pair (P) of interactive elements and a magnetic field sensor (32a) carried by the other element (2) of this first pair (P) of interactive elements.
- 25 4. Control and/or monitoring device according to claim 3, characterised by the fact that the state encoder (3, 21) includes in a permanent way primarily a pair of magnetized tracks (31a, 31b), distant the one from the other, carried by the label (1) and a pair of corresponding Hall effect

sensors (32a, 32b), carried by the reader (2), characterised by the fact that the magnetised tracks (31a, 31b) are laid out compared to the corresponding Hall effect sensors (32a, 32b) for a reference relative position of the label (1) compared to the reader (2) and only for this position and characterised by the fact that the status signal (STAT) takes at least two different principal logical values, according to whether the label (1) is, or not, in its reference relative position compared to the reader (2).

5. Control and/or monitoring device according to claim 4, characterised by the fact that the tracks (31a, 31b) of the pair of magnetised tracks present reversed polarities.
10. Control and/or monitoring device according to the claim 4 or 5, characterised by the fact that the label (1) is physically guided, compared to the reader (2), between the reference relative position and a plurality of distant positions while passing by at least one of the two intermediate relative positions, in each one of which only one magnetised track (31a; 31b) is detected by a Hall effect sensor (32b; 32a) and characterised by the fact that the status signal (STAT) takes at least two different secondary logical values, according to whether the label (1) is, or not, in one of the intermediate relative positions.
15. Control and/or monitoring device according to claim 6, characterised by the fact that the label (1) is guided in translation movement compared to the reader (2) along a translation axis (X) and characterised by the fact that the magnetised tracks (31a, 31b) are distant the one from the other along this translation axis (X).
20. Control and/or monitoring device according to claim 7, characterised by the fact that the magnetised tracks (31a, 31b) are tilted compared to the translation axis (X).

9. Control and/or monitoring device according to any of the claims 7 and 8, characterised by the fact that the label (1) takes the form of a card and by the fact that the reader (2) is at least partially flat.
10. Control and/or monitoring device according to any of claims 6 to 8, 5 characterised by the fact that the label (1) is guided in rotation movement compared to the reader (2) along a rotation axis (Y) and by the fact that the magnetised tracks (31a, 31b) are angularly distant the one from the other by rotation around the rotation axis (Y).
11. Control and/or monitoring device according to any of the claims 7 and 10, 10 characterised by the fact that the label (1) takes a cylindrical form and by the fact that the reader (2) itself is at least partially cylindrical.
12. Control and/or monitoring device according to any of the preceding 15 claims combined with claim 4, characterised by the fact that the reader (2) includes a power supply circuit and pulse shaper (21) belonging to the state encoder (3, 21) and connected to the Hall effect sensors (32a, 32b) and a communication circuit (22) connected to the aerial (20) of this reader (2).
13. Control and/or monitoring device according to the claims 6 and 12, 20 characterised by the fact that the communication circuit (22) adopts selectively at least a passive state and an active state and by the fact that the status signal (STAT) made the communication circuit (22) moves from its passive state to its active state at the moment of the passage of the corresponding label (1) from a distant relative position to an intermediate relative position.
- 25 14. Control and/or monitoring device according to any of the preceding claims, characterised by the fact that it includes several pairs (P, P') of interactive elements, each one of which includes an electronic label (1, 1') and a tag reader (2, 2'), characterised by the fact that the readers (2,

2') of the various pairs (P, P') of interactive elements are connected to a communication network (4) and by the fact that all the labels (1, 1') of the various pairs (P, P') have different identification codes (KID1, KID1').

- 5 15. Control and/or monitoring device according to claim 14, characterised by the fact that it includes a polling circuit (5), connected to the communication network (4), communicating periodically with each reader (2, 2'), characterised by the fact that each reader (2, 2') reads the identification code (KID1, KID1') of the associated label (1, 1') as far as
10 this reader (2, 2') and the associated label (1, 1') are in their reference relative position, characterised by the fact that each reader (2, 2') transmits to the polling circuit (5) the identification code (KID1, KID1') of the associated label (1, 1') as far as it was read and characterised by the fact that the polling circuit (5) compares each identification code
15 (KID1, KID1') transmitted to him with a memorised reference code (KMM, KMM') and produces a anomaly signal (WARN) in the event of the absence of one of the codes to be compared or in case of disparity of the compared codes.